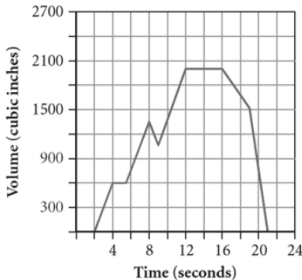



7.3 Graphs of Real World Situations

Objective: Students will construct and interpret graphs that describe real-world situations.

Like pictures, graphs communicate A LOT of information. So, you will need to be able to interpret, draw and communicate about graphs.


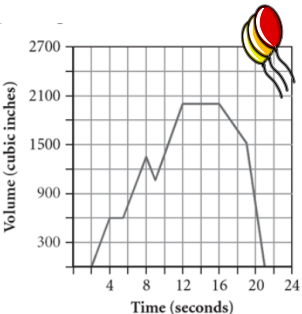


Objective: Students will construct and interpret graphs that describe real-world situations.

In this lesson, you will be able to describe graphs using the following terms:

- linear
- non-linear
- increasing
- decreasing
- rate of change
- continuous
- discrete
- maximum
- minimum

Objective: Students will construct and interpret graphs that describe real-world situations.

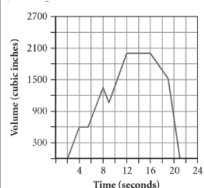


This graph shows the volume of air in a balloon as it changes over time.

Talk to your group about what is happening.

7.3 Graphs of Real World Situations

Objective: Students will construct and interpret graphs that describe real-world situations.



- The graph shows how the volume of air changes over time. The balloon is completely deflated for about the first 2 seconds.
- From 2 seconds to about 4 seconds, the balloon is inflated at a fairly steady rate.
- Between the 4- and 5.5-second marks, the volume stays constant at about 600 cubic inches. Perhaps the person blowing up the balloon is holding the balloon closed while she takes a breath.
- From 5.5 - 8 seconds the balloon is being inflated again.
- From 8 - 9 seconds the volume of air decreases slightly. The person might be taking another break but not holding the balloon closed tightly, allowing air to escape.
- From 9 - 12 seconds, the balloon is inflated more.
- Then, from 12 to 16 seconds, the volume is steady at about 2000 cubic inches. Perhaps the balloon is fully inflated so that the person stops blowing and holds the balloon closed.
- From about 16 - 19 seconds, the balloon is deflating slowly. The person may be holding the balloon partially closed.
- Between 19 and 22 seconds, the balloon is deflating quickly. The person might have let go of the balloon, allowing the air to escape rapidly.

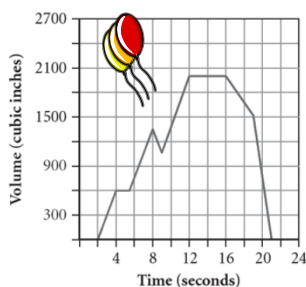


Objective: Students will construct and interpret graphs that describe real-world situations.

In this example, the volume of air in the balloon is a function of time. That means, the amount of air in the balloon depends on how much time has passed.

What is the independent variable?

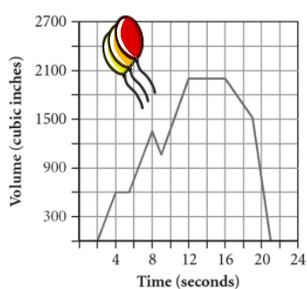
What is the dependent variable?



Objective: Students will construct and interpret graphs that describe real-world situations.

What is the domain?

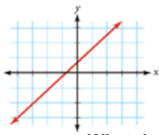
What is the range?



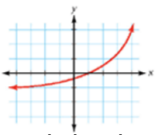
7.3 Graphs of Real World Situations

Objective: Students will construct and interpret graphs that describe real-world situations.

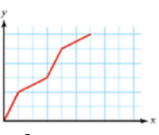
Graph A



Graph B



Graph C




What do these graphs have in common?

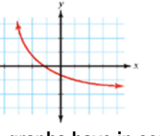
How would you describe the rate of change in each?

Objective: Students will construct and interpret graphs that describe real-world situations.

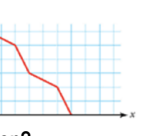
Graph D



Graph E



Graph F



What do these graphs have in common?

How would you describe the rate of change in each?

Objective: Students will construct and interpret graphs that describe real-world situations.

Situation A: During the first few years, the number of deer on the island increased by a steady percentage. As food became less plentiful, the growth rate started slowing down. Now, the number of births and deaths is about the same.

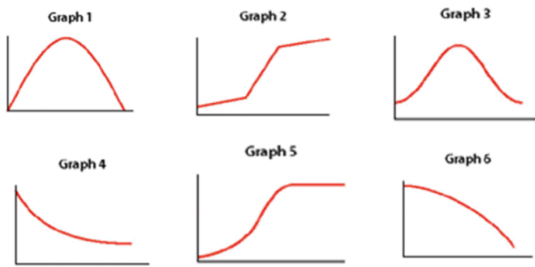
Situation B: In the Northern Hemisphere the amount of daylight increases slowly from January through February, faster until mid-May, and then slowly until the maximum in June. Then it decreases slowly through July, faster from August until mid-November, and then slowly until the year's end.

Situation C: If you have a fixed amount of fencing, the width of your rectangular garden determines its area. If the width is very short, the garden won't have much area. As the width increases, the area also increases. The area increases more slowly until it reaches a maximum. As the width continues to increase, the area becomes smaller more quickly until it is zero

Situation D: Your cup of tea is very hot. The difference between the tea temperature and the room temperature decreases quickly at first as the tea starts to cool to room temperature. But when the two temperatures are close together, the cooling rate slows down. It actually takes a long time for the tea to finally reach room temperature.

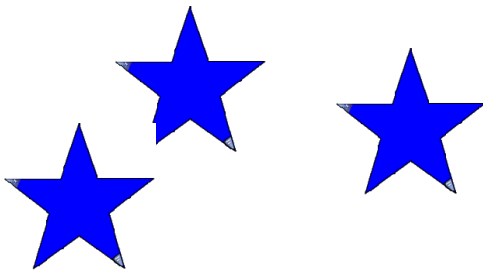
7.3 Graphs of Real World Situations

Objective: Students will construct and interpret graphs that describe real-world situations.

[illegible]

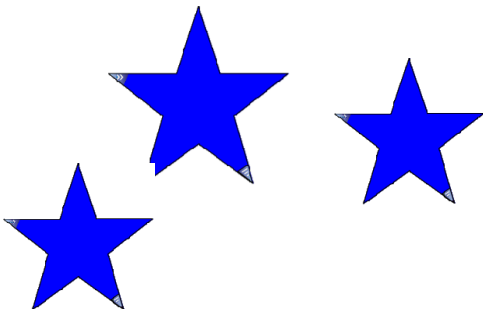
Objective: Students will construct and interpret graphs that describe real-world situations.

How do the first two situations differ from the last two?

[illegible]

Objective: Students will construct and interpret graphs that describe real-world situations.

What kind of growth is represented in Situations A and D?

[illegible]

7.3 Graphs of Real World Situations

Objective: Students will construct and interpret graphs that describe real-world situations.

Homework: On the wiki!

Lesson 7.3 Worksheet - Graphs of Real-World Situations
